



**NTSB** National Transportation Safety Board

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*Office of Marine Safety*

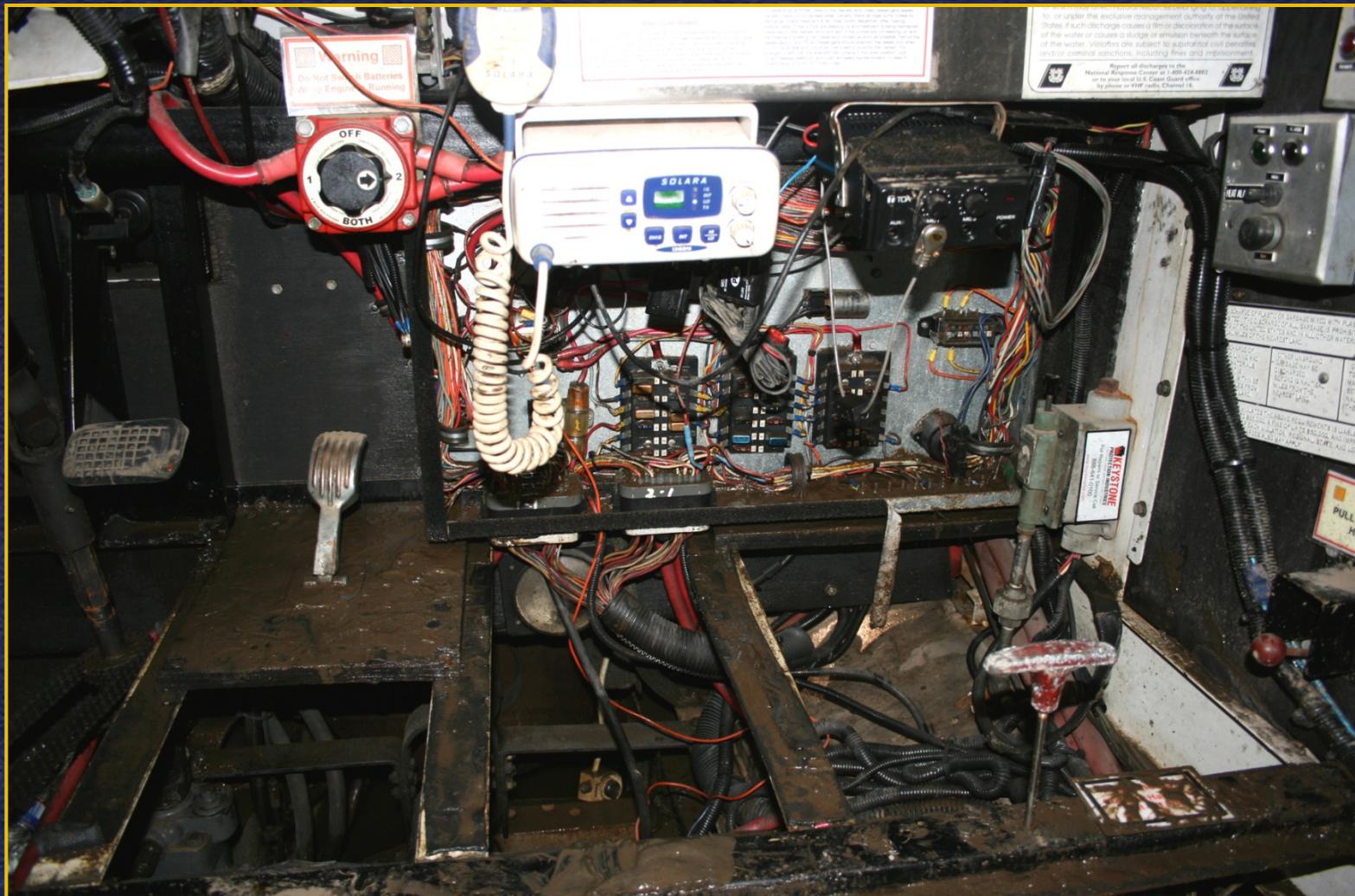
**Collision of  
*Caribbean Sea / The Resource  
with DUKW 34***

Thomas Roth-Roffy, P.E.  
Engineering Factors

# Examination of *DUKW* 34

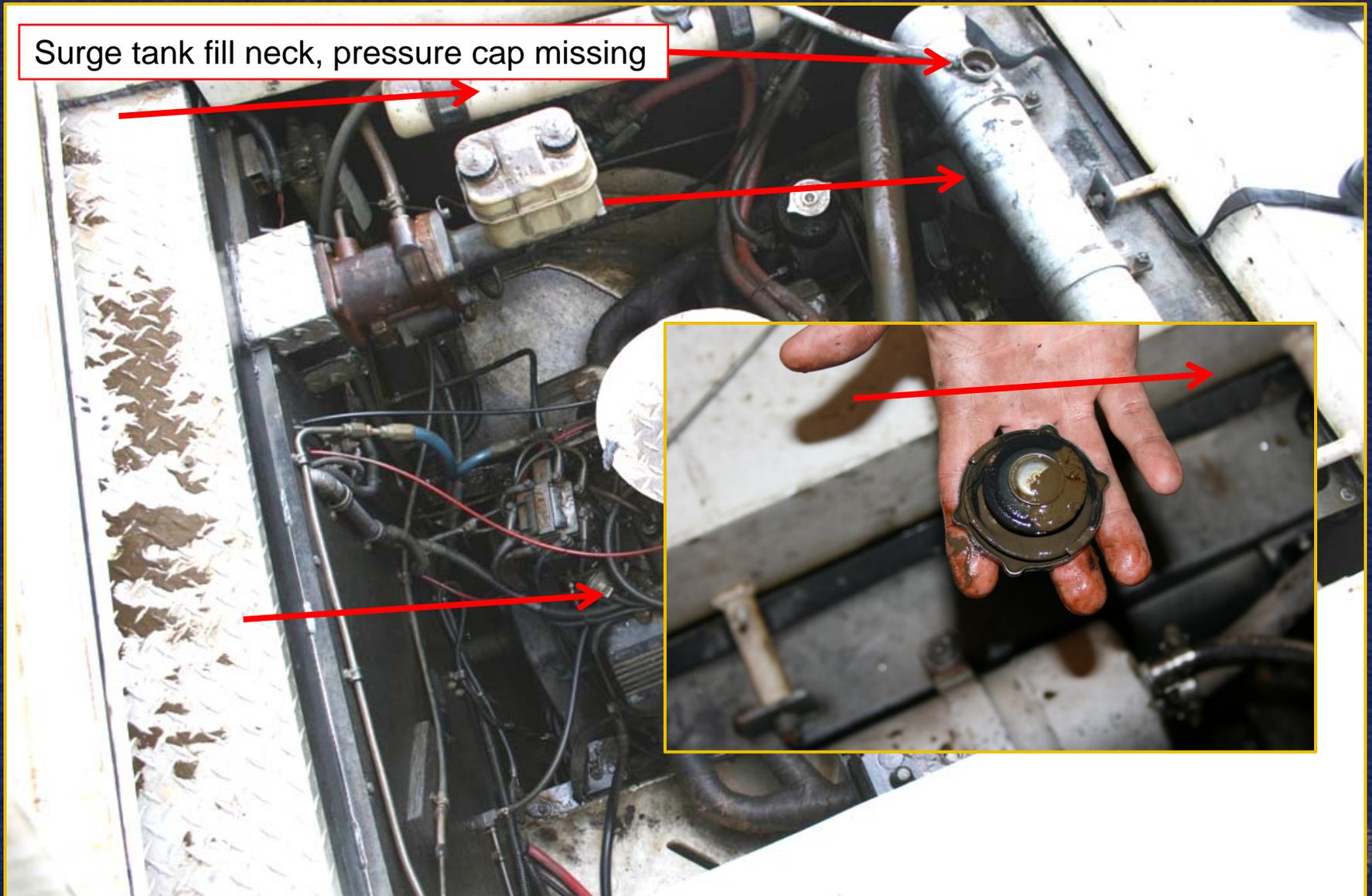


# Examination of DUKW 34

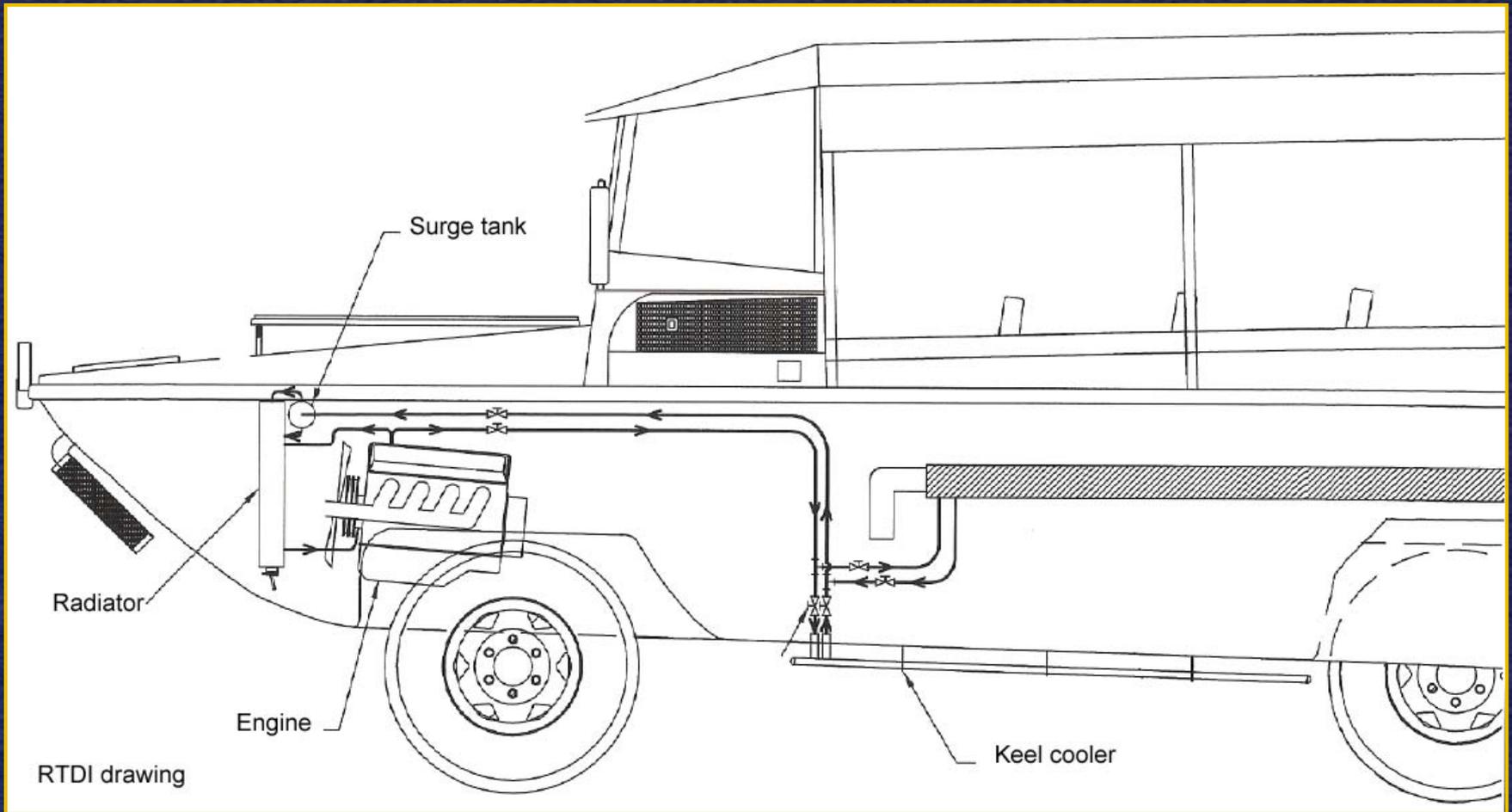


# Examination of *DUKW* 34

Surge tank fill neck, pressure cap missing



# Engine cooling system



# Engine cooling system tests

- System leak test
- Water pump (impeller condition, shaft fit)
- Radiator/ventilation (flow test)
- Thermostats (temperature set point)
- Keel cooler (flow test)
- Engine heads (flatness, leaks)

Boiling point @ 13 psi ~ 245 degrees F

# Trials – Branson



# APV Maintenance

- Daily inspections by master and mechanic
- Mechanic checked fluid levels
- Cap not installed or improperly installed

# Results

1. No evidence of onboard fire
2. Engine Overheat Condition
  - Missing radiator cap
  - Progressive evaporation of coolant
  - High ambient air temperature
  - Full passenger load
  - Engine load due to upstream travel



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